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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/618,741	07/18/2000	Thomas M. Hartnett	07206-118001	8640
51503	7590	05/10/2007	EXAMINER	
RAYTHEON COMPANY			HOFFMANN, JOHN M	
c/o DALY, CROWLEY, MOFFORD & DURKEE, LLP			ART UNIT	PAPER NUMBER
354A TURNPIKE STREET			1731	
SUITE 301A				
CANTON, MA 02021-2714				
MAIL DATE		DELIVERY MODE		
05/10/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	09/618,741	HARTNETT ET AL.
	Examiner John Hoffmann	Art Unit 1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 April 2007 and 27 February 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 32-92 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 32-92 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 32-37, 39-92 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 32: there is confusing antecedent basis for "nitrogen gas" of line 13 – it is unclear if it the same gas as line 10 and it is passed over the mixture twice, or what.

Claims 34 and 47 has the identical problem.

Claim 36: there is confusing antecedent basis for aluminium oxide particles and carbon particles of lines 12-13: it is unclear if they are additional alumina and additional carbon.

Claim 80 requires heating a mixture at a constant temperature. The term 'heating' usually means to add heat. But if the mixture has a constant temperature, the term "heating" typically does not apply. It is unclear whether it is actually being heated, or if the temperature is actually constant.

Various claims have confusing antecedent basis for "temperature" see for example claim 53 refers to "said the temperature". All of the claims must be corrected to provide proper antecedent basis.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 58-83 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 58: there is no support for step (b) as presently claimed. There is no support for step c of claim 60. There is no support for the invention of claim 68. There is no support for step b of claim 76. Since Applicant has not disputed the Office's finding that these claims fail to comply with the written description requirement, it is deemed that applicant agrees these claims fail to comply.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 1731

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 32-86, 88-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire 4686070 in view of Serpek 1030929 and optionally in view of Feeco.com's webpage on Rotary Kilns.

See how the reference were applied in prior Office actions.

As to the new claims:

Art Unit: 1731

Claim 84-88 are admitted by applicant to be covered by prior claims 8 10 11 12 and 13 – and thus are obvious for the reasons of record.

Claim 89: it would have been obvious to perform routine experimentation to determine the optimal time and temperature requirements.

Claim 90-91: room temperature would be the initial temperature.

Claim 92: it would have been obvious to ramp up the material as quickly as possible, so as to save as much time as possible.

Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire in view of Serpek and optionally in view of Feeco.com's webpage on Rotary Kilns as applied to claim 86 above, and further in view of Abstract of JP403023269A or Dodds 5925584.

See how these references were applied in the previous rejections – for example that of April 6, 2003. Applicant has not provided any arguments regarding this combination of references, thus it is deemed that Applicant agrees that it is appropriate.

Claims 32—86 and 88-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art Admission (hereinafter 'APAA') in the paragraph

Art Unit: 1731

spanning pages 1-2 of the specification, alone or in view of Serpek 1030929 and optionally in view of Feeco.com's webpage on Rotary Kilns.

See how the reference were applied in prior Office actions. Applicant has not provided any arguments regarding this combination of references, thus it is deemed that Applicant agrees that it is appropriate.

Feeco's reference can be applied because it discloses that using a rotary kiln (not unlike Applicant's fig 5-6) indicates that rotary furnaces have been the preferred means for heat treating solids for over 100 years – and it reduces processing time from an hour to a few minutes. It is not invention to apply a 100 year old preferred technique to a known process.

Response to Arguments

Applicant's arguments filed 12 October 2006 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In other words applicant's arguments are directed to only the primary references of each rejection. None of the arguments point to any error in the combination of references.

Applicant argues that Applicant discovered that they discovered one can produce AION more rapidly. This discovery is well known. See for example the Feeco.com reference which indicates that rotary furnaces have been the preferred means for heat treating solids for over 100 years – and it reduces processing time from an hour to a few minutes.

Regarding the objection, it is argued that the claims do not set forth a plurality of steps. The claims clearly has steps – for example see the preamble of claim 60 which states that the process “comprising the steps of”. It is also argued that the indents is merely a suggestion. Absent a reason to not provide indents, the objection is maintained. Examiner has the authority to require compliance.

Response to Arguments

Applicant's arguments filed 2-27-07 have been fully considered but they are not persuasive.

It is argued that noting in the references recognizes that one can eliminate one step of the two step process. The relevance of this argument is not understood – the rejection is not based on eliminating any reaction step. The rejection is based on the mere obvious conversion of a batch process to a continuous one. The rejection results in performing the prior steps simultaneously. It is well understood that reactions (on an atomic level) usually occur in a piecemeal manner – one compound reacts with another to form an intermediate, then the intermediate forms with another compound to form the final (or a further intermediate). In other words, one of ordinary skill would recognize

Art Unit: 1731

that applicant's invention also inherently requires the two-step process. The reactions occur at substantially at the same time.

As pointed out previously, running the process continuously is generally not a patentable invention.

From MPEP 2144.04

E. Making Continuous

In re Dilnot, 319 F.2d 188, 138 USPQ 248 (CCPA 1963) (Claim directed to a method of producing a cementitious structure wherein a stable air foam is introduced into a slurry of cementitious material differed from the prior art only in requiring the addition of the foam to be continuous. The court held the claimed continuous operation would have been obvious in light of the batch process of the prior art.).

It is further argued that taking the combination of references it would appear that one would first only partially react the carbon and nitrogen then remove (the results then perform) a one hour soak. Then perform final conversion to aluminum oxynitride. Examiner does not agree. Applicant gives no explanation to support this conclusion.

As indicated by the Supreme Court in KSR vs. Teleflex:

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

A high efficiencies and reduced processing times are universal design needs or market pressures. Making stuff more efficiently and more quickly is a near universal goal. Feeco points that these are known properties of this rather old technology. Applicant merely applied ordinary skill and common sense to make a known product

Art Unit: 1731

using known ingredients, by using a known mode of increasing efficiency and reducing processing time.

It is further argued that Maguire teaches away from producing aluminum oxynitride by merely introducing alumina, carbon and nitrogen into a drum. Examiner disagrees because the disclosure of this reference does not criticize, discredit, or otherwise discourage the invention or the combination. *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1145-46 (Fed. Cir. 2004).

It is further argued that there are two different temperature ranges in the two step process. The relevance of this is not understood, nor is it pointed out. Moreover, one of any skill in the rotary kiln art knows that different zones of the kiln has different temperature ranges. Those zones closest to the heat source are much hotter than those areas farthest away. Applicant's materials start out substantially at room temperature, are ramped up to the maximum temperatures, then reduced back towards room temperatures.

The arguments regarding the temperature remain constant are confusing and not understood. Applicant should point out exactly what material/gas/structure is at what temperature and for what constant duration. One of any skill (high, low or ordinary) in the rotary kiln art would instantly recognize that applicant's invention (e.g. figure 6) would start out with the material being substantially at room temperature as it transferred from 310 to the kiln 110, then heat up higher and higher as it traveled along the length of the kiln, until it exited the kiln. There would be no appreciable constant

Art Unit: 1731

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The arguments regarding the temperature remain constant are confusing and not understood. Applicant should point out exactly what material/gas/structure is at what temperature and for what constant duration. One of any skill (high, low or ordinary) in the rotary kiln art would instantly recognize that applicant's invention (e.g. figure 6) would start out with the material being substantially at room temperature as it transferred from 310 to the kiln 110, then heat up higher and higher as it traveled along the length of the kiln, until it exited the kiln. There would be no appreciable constant

Art Unit: 1731

temperature for any particles/mass in the furnace. The only constant temperature would be that of the walls of the furnace.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

Art Unit: 1731

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Hoffmann
Primary Examiner
Art Unit 1731

5-9-07

jmh